



Lafarge's Experience with Meat and Bone Meal



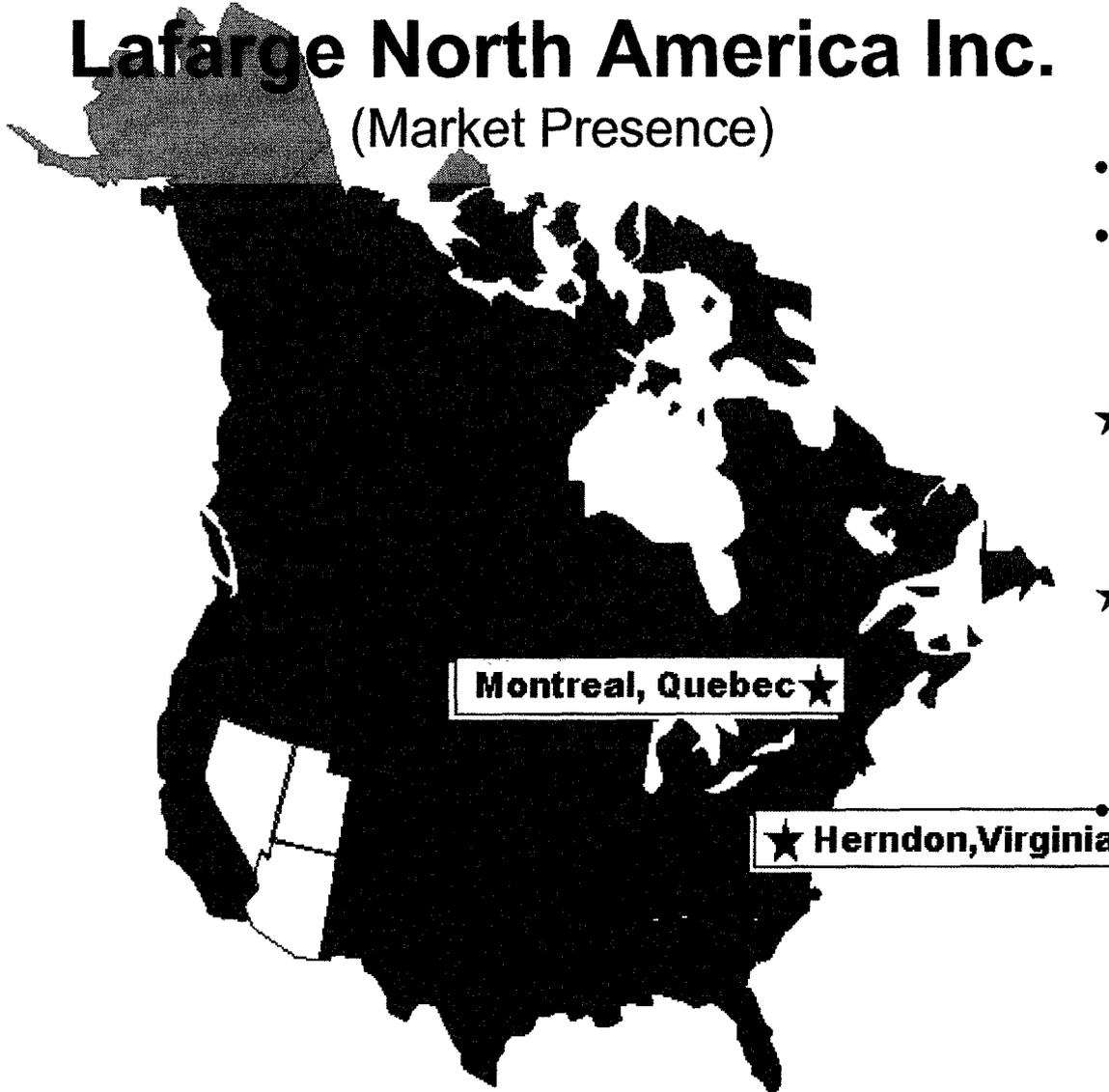
Lafarge North America

- The largest diversified supplier of construction materials in the United States and Canada including:
 - ▶ Cement and cement-related products
 - ▶ Aggregates and asphalt
 - ▶ Concrete and concrete products
 - ▶ Gypsum drywall and a complementary line of finishing products
- Listed on the New York and Toronto Stock Exchanges (symbol:LAF)
- Part of the Lafarge Group, the world leader in building materials with 77,000 employees in 75 countries reporting €13.6 billion in sales for 2003.



Lafarge North America Inc.

(Market Presence)



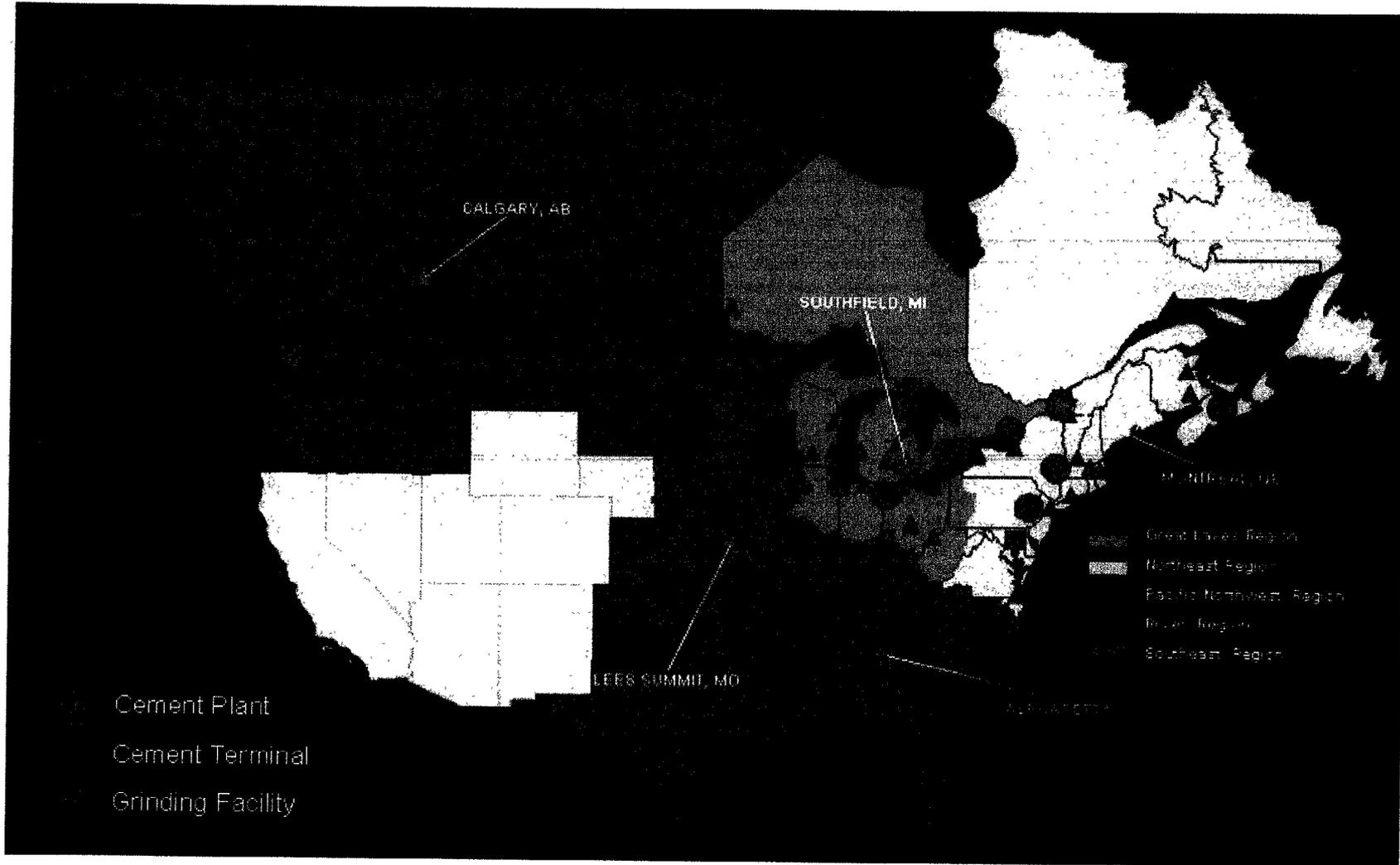
- Over 1000 operations throughout the U.S. and Canada
- More than 15,000 employees
- 2003 sales of USD \$3.3 billion

- ★ North American Corporate headquarters, Herndon, Virginia
- ★ Lafarge Canada Inc. headquarters, Montreal, Quebec

3 main business segments:

- Cement and Cement-related products
- Construction Materials
- Gypsum

Cement and Cement-Related Products



Environmental Standards

- Establishing policies, procedures, guidelines and practices to help us meet our responsibilities
- Auditing periodically our operating facilities and our performance
- Communication and cooperation with all levels of government
- Environmental outreach efforts
- Reduce, re-use and recycle by-products
- Sustainable development



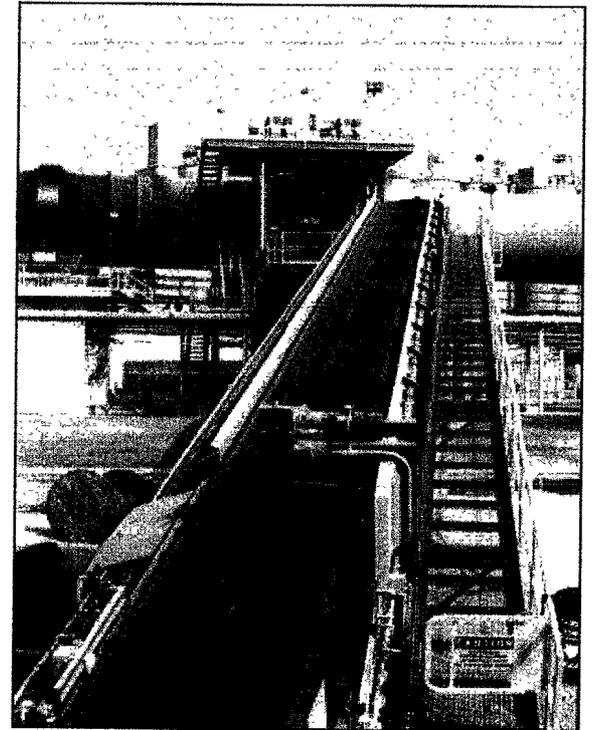
Alabama Brickyard



Conservation Partner
Founding Member

What is an alternative fuel to Lafarge?

- An alternative fuel represents a replacement BTU value in comparison to coal
- Examples include:
 - Fuel Quality Hazardous Waste
 - Tires
 - Carpet
 - Plastics
 - Spent pot liners
 - Animal meal
 - Used oil
 - Auto fluff
 - Coal tar fuels
 - Landfill Gas
 - Shredded diapers



Lafarge: A World-Wide Alternative Fuel Experience

Lafarge has plants with almost non-existent fuel cost in the United States, Europe, and South America

In North America: Harleyville, SC, St-Constant, Quebec, Brookfield, Nova Scotia, Paulding, OH, Fredonia, KS, Atlanta, GA, Whitehall, PA, Tulsa, OK, Richmond, BC, Seattle, WA, Kamloops, BC, Sparrows Point, MD are burning alternate fuels.

Hope Works, Derbyshire

- Recycled liquid fuel
- Tires
- Sewage pellets
- Packaging wastes
- Bone meal

Cauldon, Staffordshire

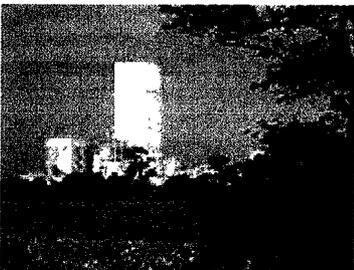
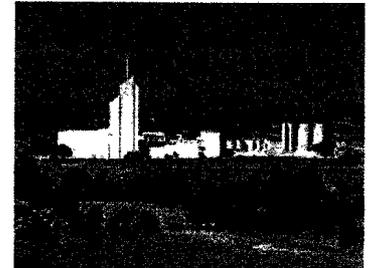
- Recycled liquid fuel
- Tires

Dunbar, East Lothian

- Recycled liquid fuel
- Tires

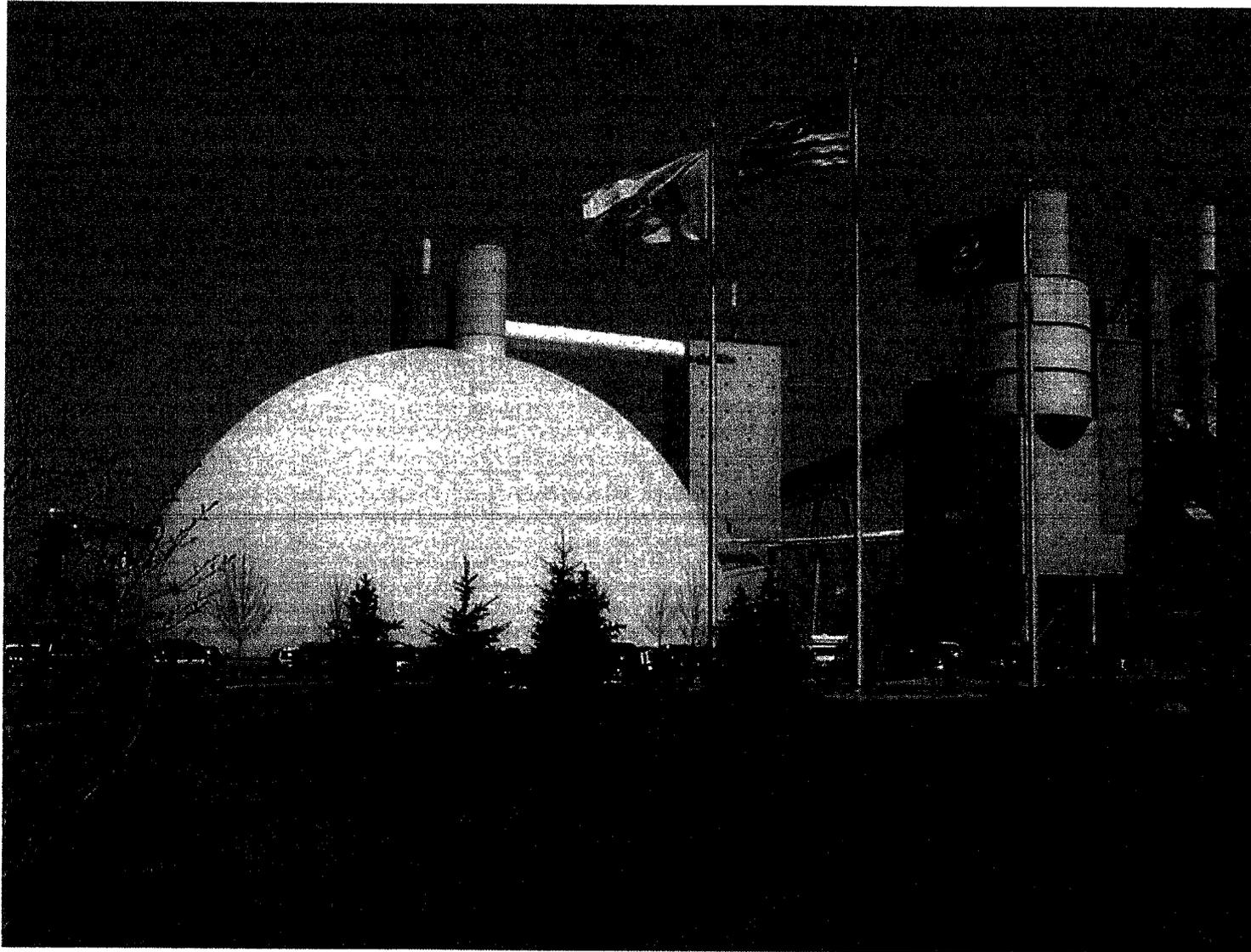
Westbury Works, Wiltshire

- Recycled liquid fuel
- Tires
- Sewage pellets
- Packaging wastes
- Bone meal





Lafarge's Alpena Michigan Cement Plant





Meat and Bone Meal

Lafarge's Experience

History

- July 1996

The French Ministry of Environment asks the Cement Industry to perform "co-incineration" tests

Le Ministre de l'Environnement

Paris, le 25 JUL, 1996

Monsieur le Président,

Comme vous le savez, le Gouvernement a pris récemment la décision de retirer du marché les systèmes nerveux centraux de tous les ruminants abattus, les cadavres d'animaux et les saies d'abattoirs. Ces dispositions complètent celles concernant le retrait des abats spécifiques de bovins nés avant le 31 juillet 1991.

L'ensemble de ces retraits concernent en période de production normale environ 400 000 tonnes de produits frais par an représentant de l'ordre de 100 000 tonnes par an de fines animales dégraissées et de 30 000 tonnes de graisses. Ces produits seront à incinérer.

Pour limiter au maximum le stockage de ces matières et les risques qui en résultent, l'importance de ces tonnages au regard des capacités d'incinération disponibles nécessite d'envisager l'incinération de ces déchets dans des installations de co-incinération.

→ A cette fin, je me verrais que des avantages à ce que l'industrie cimentière réalise rapidement des essais d'incinération de ces produits dans des cimenteries déjà autorisées à incinérer des déchets au titre de la législation des installations classées.

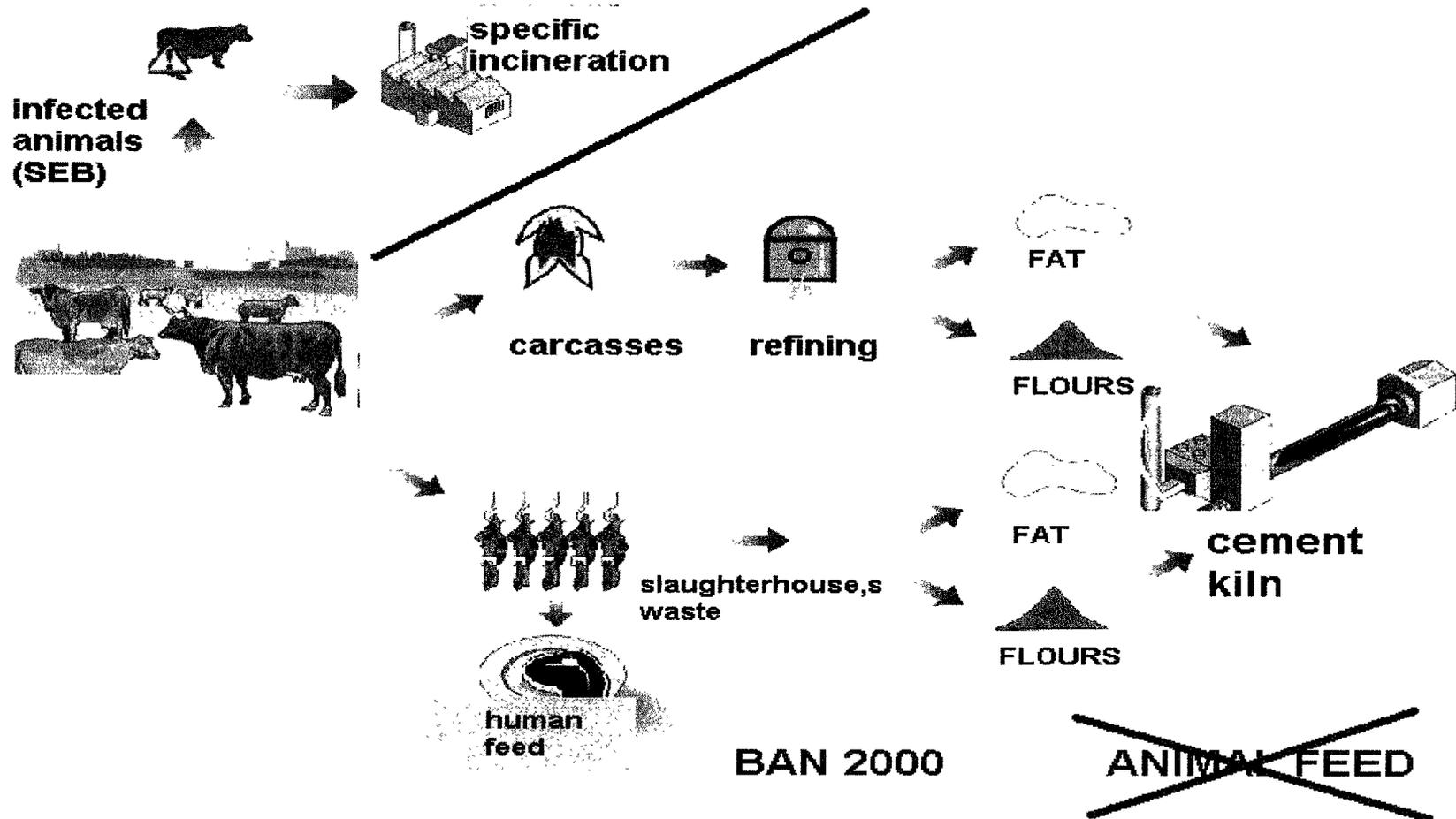
Je vous prie d'agréer, Monsieur le Président, l'assurance de ma considération distinguée.

Bien à vous,


Corinne LEPAGE

Monsieur Antoine GENRY
Président du Syndicat Français
de l'Industrie Cimentière
41, avenue de Friedland
75008 PARIS

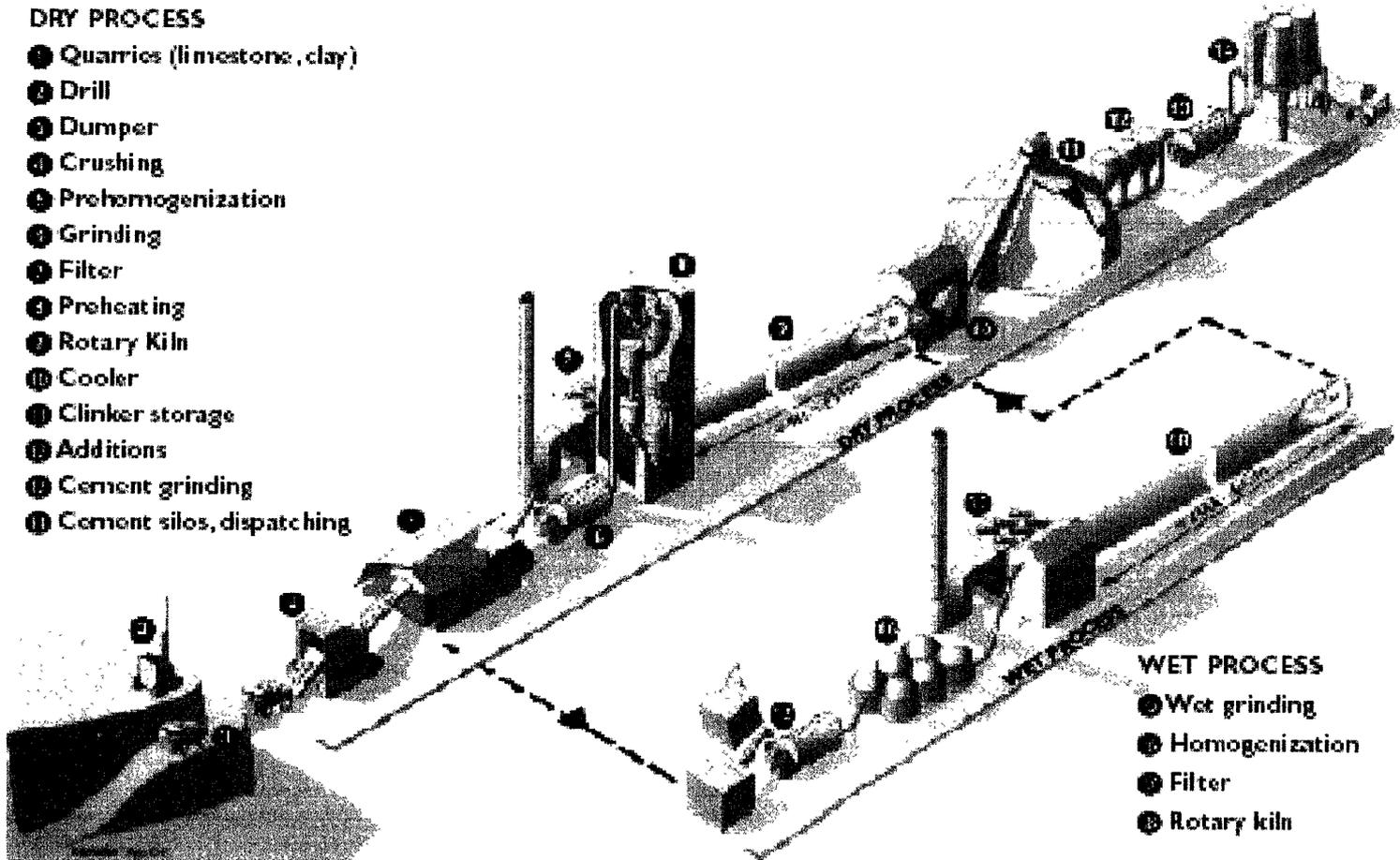
Europe's Situation



Cement Process

DRY PROCESS

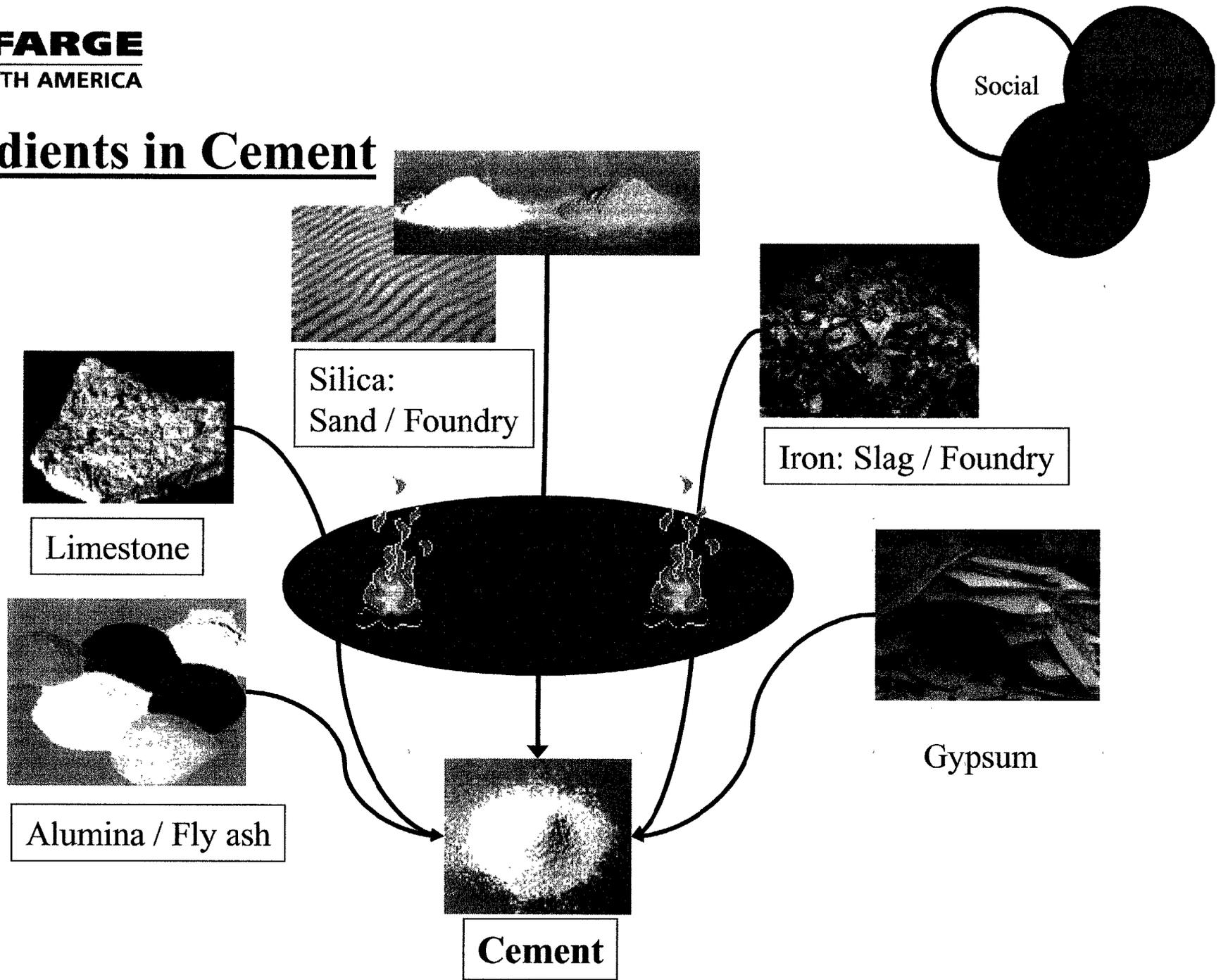
- ① Quarries (limestone, clay)
- ② Drill
- ③ Dumper
- ④ Crushing
- ⑤ Prohomogenization
- ⑥ Grinding
- ⑦ Filter
- ⑧ Preheating
- ⑨ Rotary Kiln
- ⑩ Cooler
- ⑪ Clinker storage
- ⑫ Additions
- ⑬ Cement grinding
- ⑭ Cement silos, dispatching



WET PROCESS

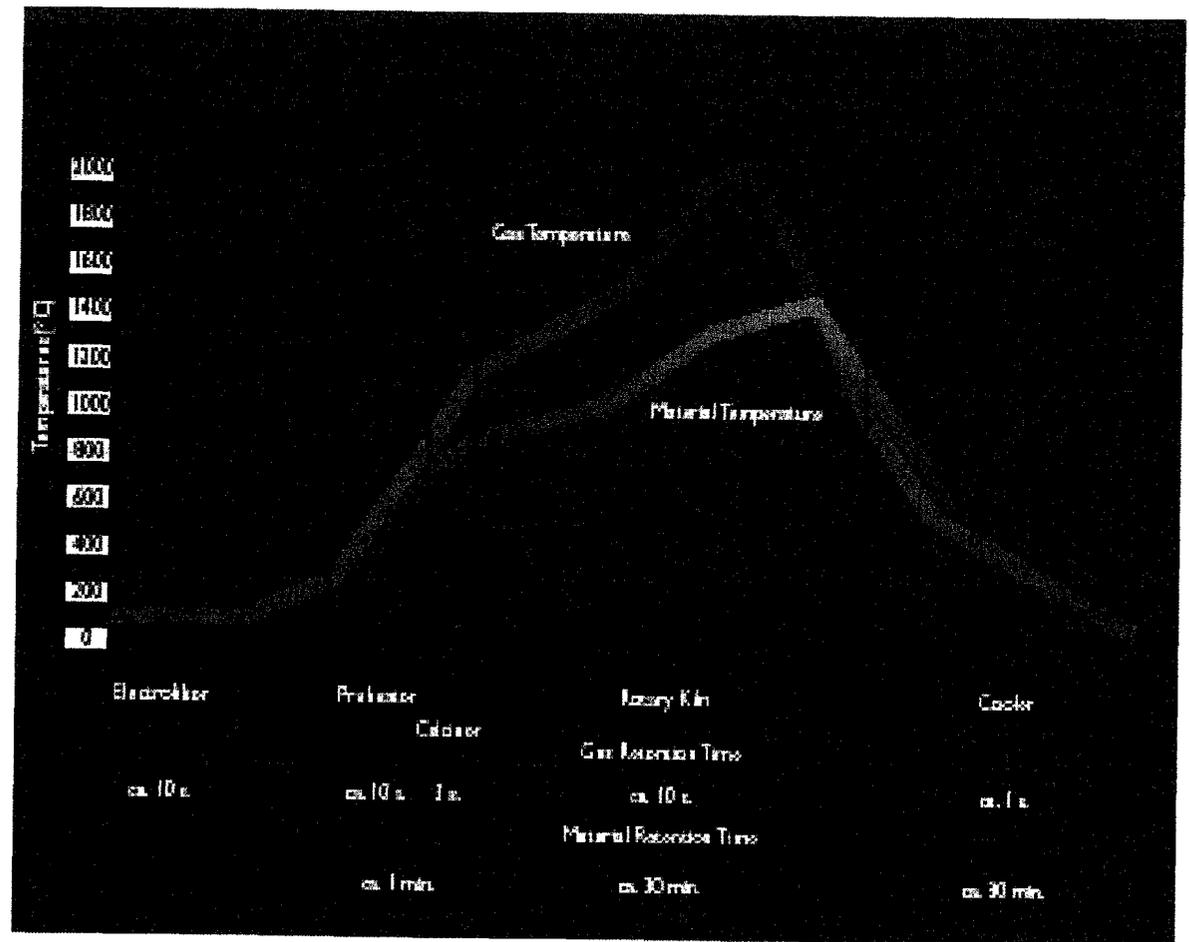
- ⑮ Wet grinding
- ⑯ Homogenization
- ⑰ Filter
- ⑱ Rotary kiln

Ingredients in Cement



Ideal Conditions

Of particular importance, for the use of alternative fuels: high temperature, long residence time and an oxidizing atmosphere in a natural alkaline environment.

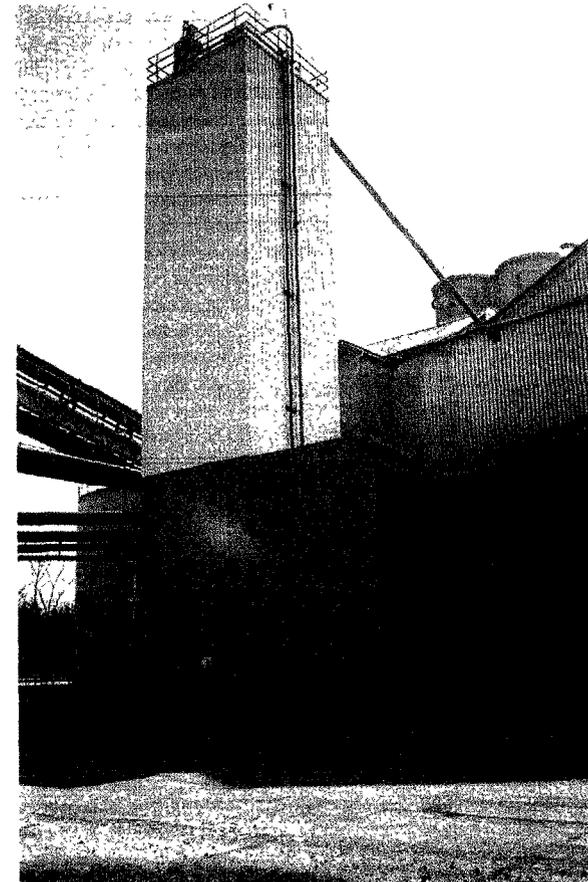
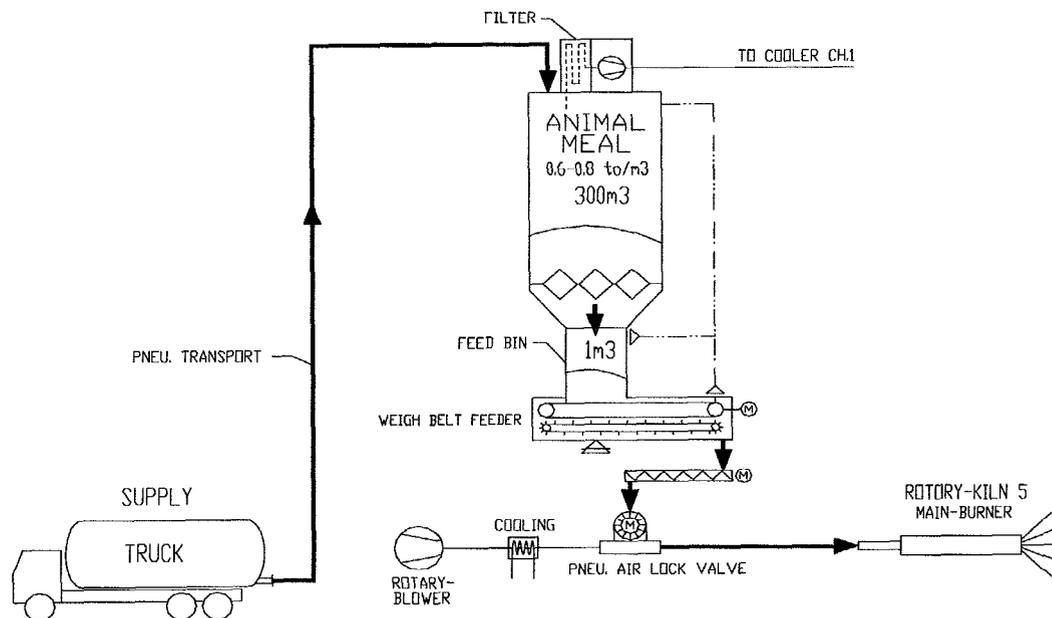


MBM Design Conception Best Practice

- Transport in enclosed trucks
- Silos dedicated to MBM
- Conveying to the kiln in fully closed circuits
- Direct injection into the main burner
- Personal protective devices
- Documentation and tracking
- Reduce odors by venting in the cooler

Retznei - Austria

- Reception Installation

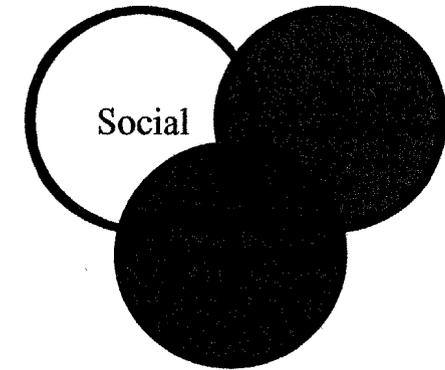




MBM 2002 Lafarge's Experience

	Plants	Tonnes
• France	9/11	144,000
• Germany	3/3	61,300
• Austria	2/2	20,700
• Spain	2/3	15,200
• Czech Rep.	1/1	1,400
• Italy	2/2	6,900
• Japan	2/2	9,000

Local Issues



- Plant receiving process
- Employee and Stakeholder education
- Plant handling issues
- Capacity assessment
- Permitting and stakeholder issues being investigated

Environmental Benefits

- Complete destruction of the organic portion
- No residue to landfill
- Replaces some conventional fuels (CO₂ emission reduction)
- Could use fat or animal meal
- Minimize Environmental Impact
 - Fully Enclosed Handling and Storage system
 - Draw on European Experience



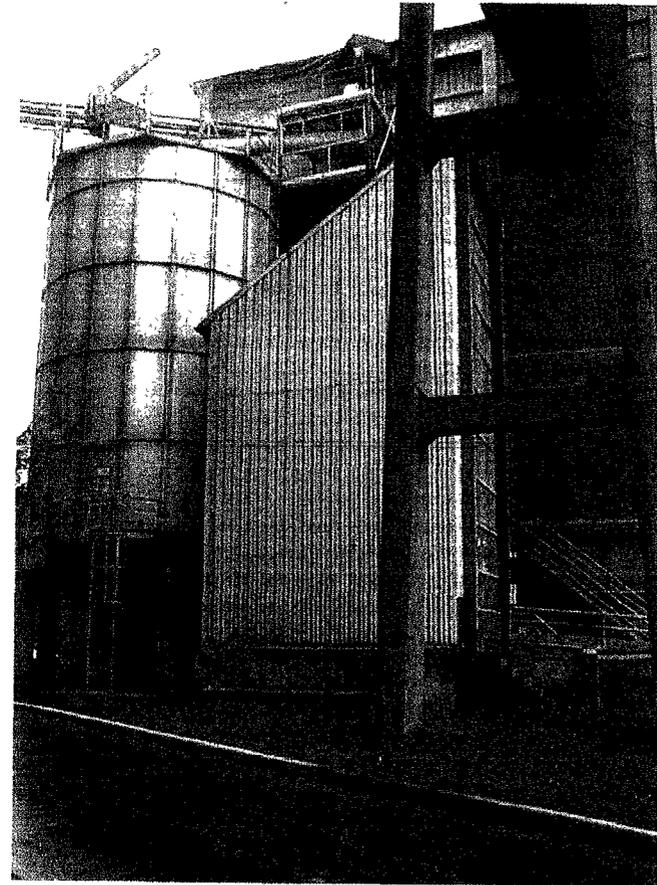
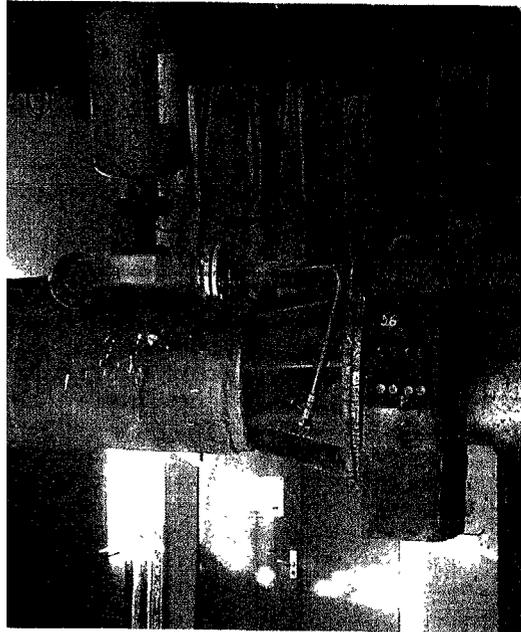
Sottenich - Germany

- Reception Installation

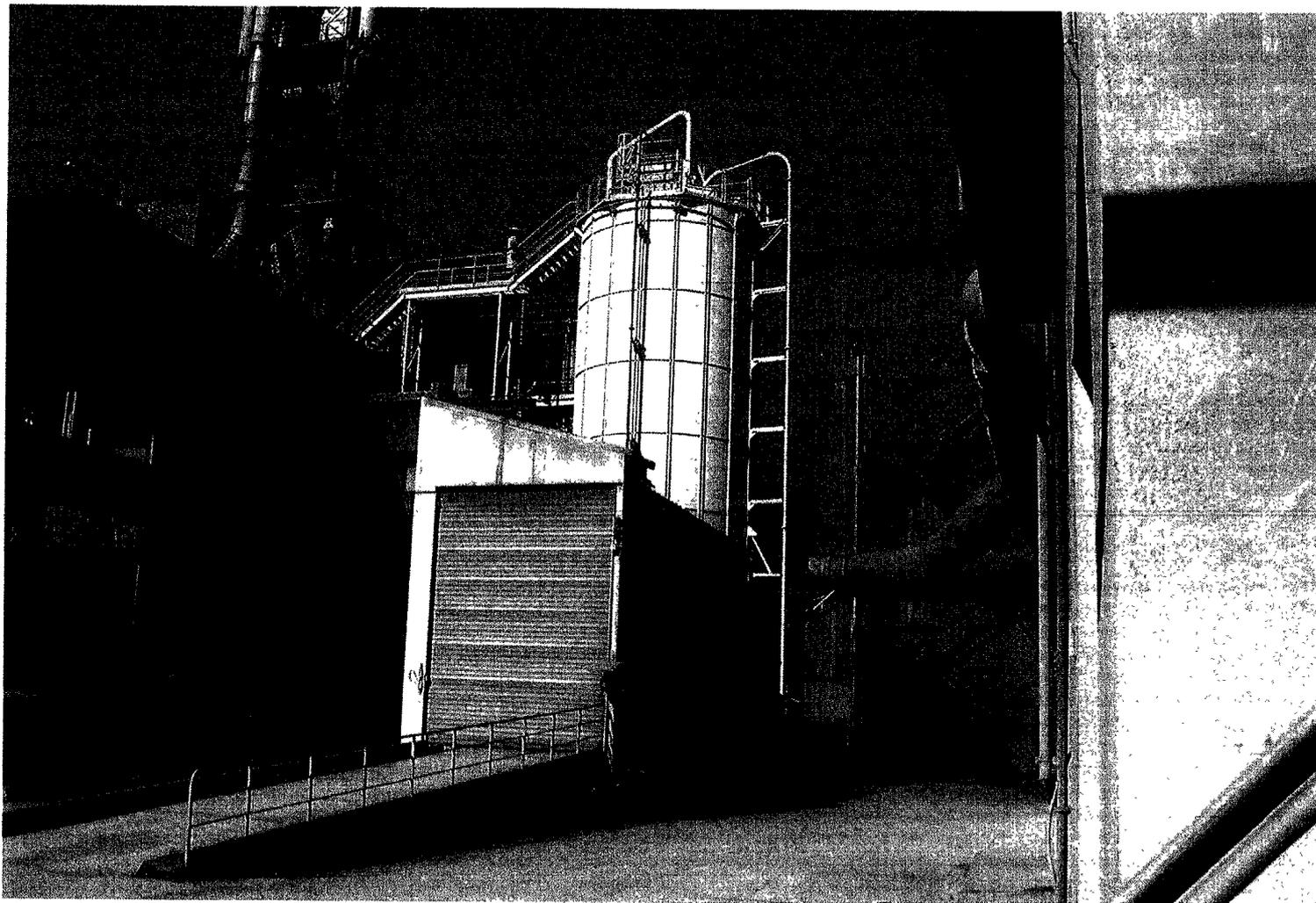


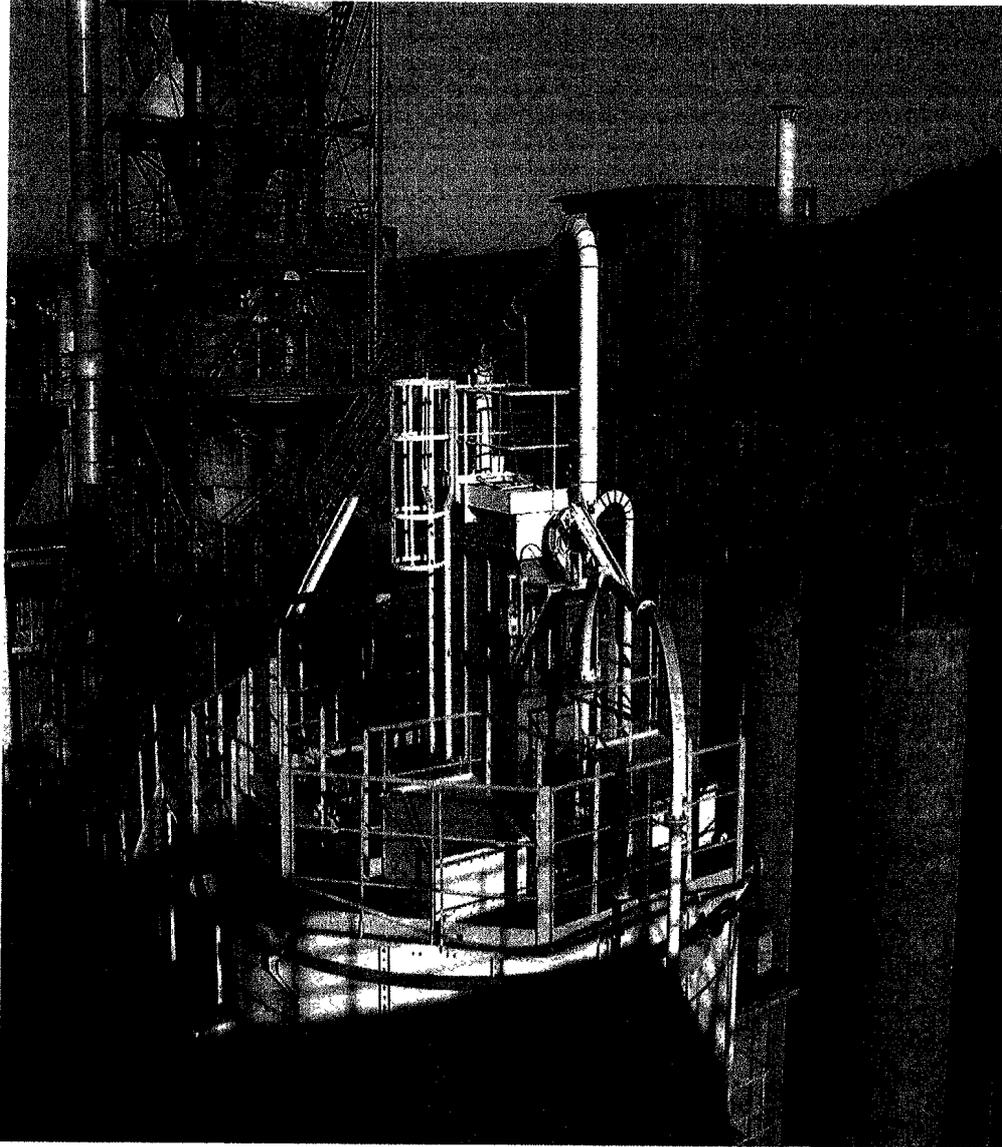
Martres - France

on Installation
ling the kiln



Val D'Azergues -- France



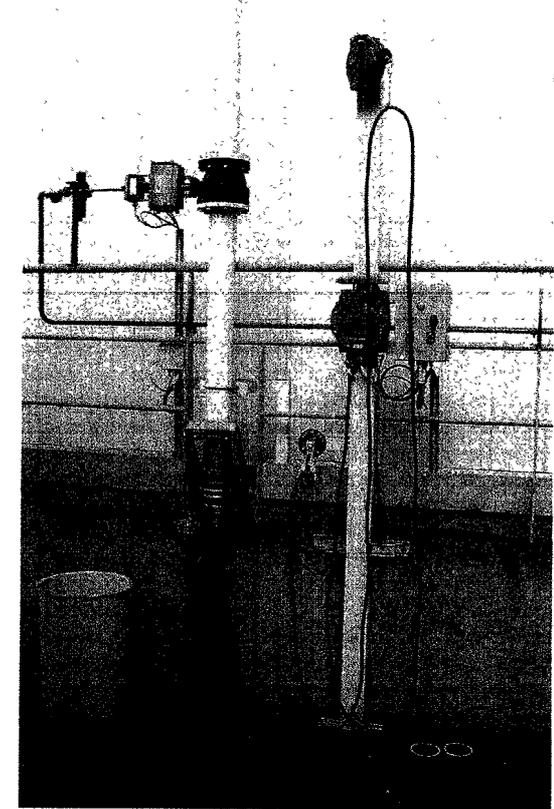
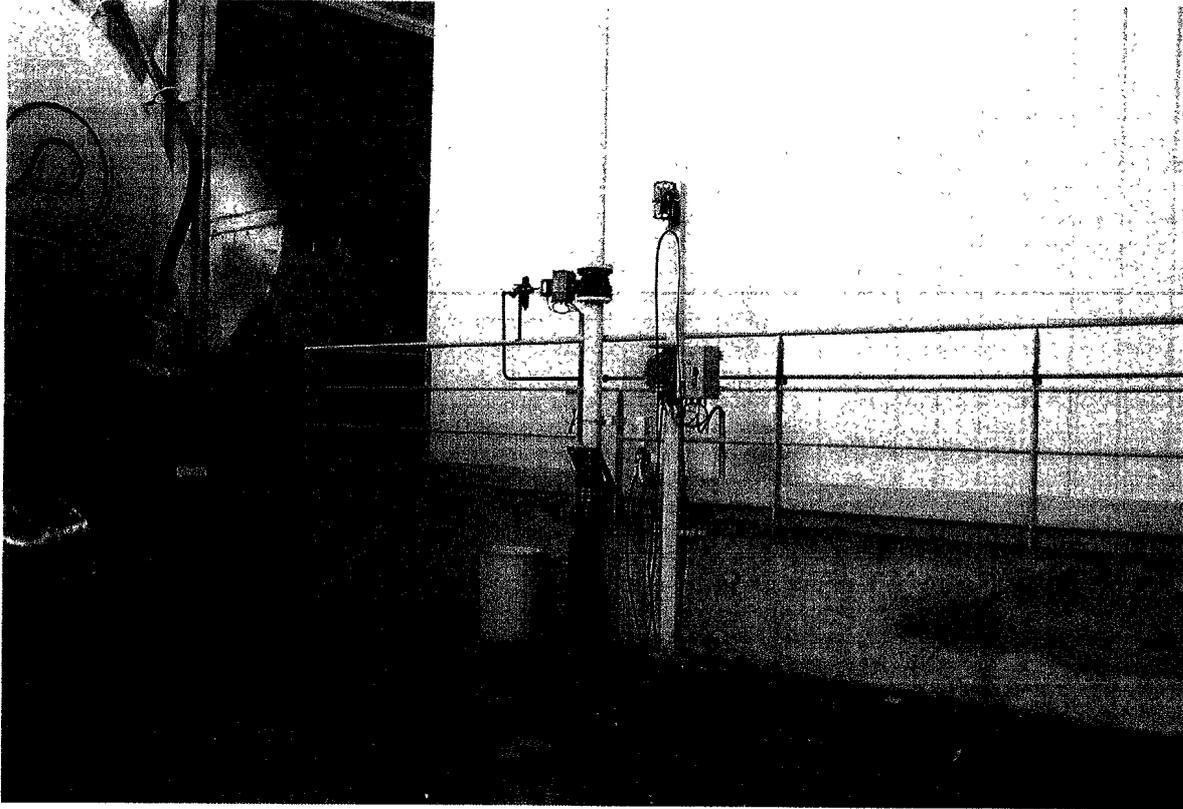


Val D'Azergues -- France

Storage tank

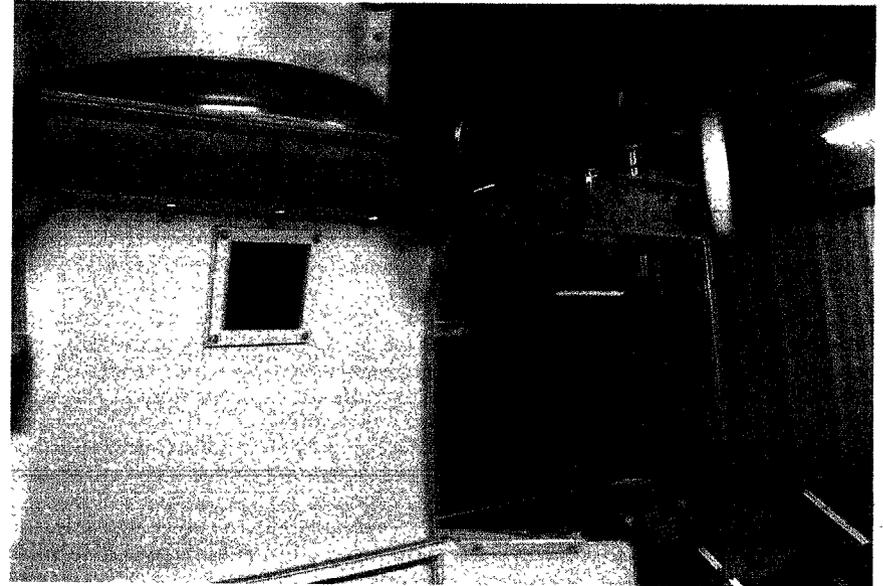
View of Silo top

Val d'Azergue, France



MBM Reception - Pneumatic Unloading

D'Azergues -- France



action system (with isolation gate under).

Val D'Azergues -- France



Air blower

Blow through rotary valve for
alternative fuels injection, feed by a
surge hopper